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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* RAYMOND E. IDEKER

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Appeal 2009-009664  
Application 10/648,162  
Technology Center 3700

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Before: WILLIAM F. PATE III, JENNIFER D. BAHR, and  
FRED A. SILVERBERG, *Administrative Patent Judges*.

PATE III, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

## STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from a rejection of claims 1-12, 15-18, 21-49 and 52-57. Br. 1 We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

The claims are directed to methods, systems and computer program products for selectively initiating interventional therapy to reduce the risk of arrhythmia. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method for selectively initiating interventional therapy in a subject, comprising:

chronically detecting electrical activity in first and second cardiac regions in the subject;

identifying discordant alternans in at least one component of the detected electrical activity based on a comparison of the electrical activity in the first and second cardiac regions; and

initiating interventional therapy in the subject responsive to the identification of discordant alternans, wherein the electrical activity comprises an electrogram from internally implanted electrodes positioned in an internal chamber and/or vessel of the heart of the subject.

## REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Christini                                      US 6,915,156 B2                      Jul. 5, 2005

Pastore                                        US 6,965,797 B2                      Nov. 15, 2005

Tsuyoshi Konta et al., *Significance of Discordant ST Alternans in Ventricular Fibrillation*, 82 Circulation, 2185, 2185-2190 (1990) (hereinafter "Konta").

## REJECTIONS

Claims 1-3, 5-12, 15-18, 21-26, 28-40, 42-49 and 52-57 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Konta and Christini.

Ans. 4.

Claims 4, 27 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Konta, Christini and Pastore. Ans. 6.

## OPINION

Appellant argues claims 1-3, 5-12, 15-18, 21-26, 28-40, 42-49 and 52-57 as a group<sup>2</sup>. Br. 5-7. We select claim 1 as the representative claim, and claims 2, 3, 5-12, 15-18, 21-26, 28-40, 42-49 and 52-57 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii). Although argued under a separate subheading, Appellant's argument regarding the rejection of claims 4, 27 and 41 is premised solely upon dependence. Br. 7.

Appellant summarizes the prior art as follows:

Christini proposes that a single electrode can be used to detect concordant alternans. Christini uses a relatively small number of electrodes, such as can be connected to a pacemaker or implantable cardiac defibrillator. *See* Christini, col. 5, lines 60-62. Christini does not teach the analysis of discordant alternans or that alternans are identified “based on a comparison of the electrical activity in the first and second cardiac regions” as recited in independent Claims 1, 18 and 38. Although the Action takes the position that Konta discloses these features, Konta requires 60 electrodes that are attached to the exposed pericardium of a dog. *See* Konta, page 2185, col. 2. Thus, neither reference discloses or renders obvious identifying discordant alternans based on a comparison of the electrical activity in the first and second cardiac regions using electrodes

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<sup>2</sup> We note that on pages 5 and 7 of the Brief this list should apparently include claims 52-57 to be consistent with page 1. *See also* Ans. 2-3.

that are internally implantable and positioned in an internal chamber and/or vessel of the heart of the subject.

Br. 6.

We agree with Appellant that no single reference discloses identifying discordant alternans based on a comparison of the electrical activity in the first and second cardiac regions using electrodes that are internally implantable and positioned in an internal chamber and/or vessel of the heart of the subject. However, “[n]on-obviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. *See In re Merck & Co. Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) (citation omitted). The subject matter of claim 1 involves nothing more than applying the known technique described by Christini to the known process described by Konta in order to yield the predictable result of rapidly detecting discordant alternans, and therefore would have been obvious to one of ordinary skill in the art.

Konta demonstrates the desirability of detecting discordant alternans since “an increased amplitude and discordance of ST alternans during acute myocardial ischemia are related to ventricular fibrillation and act as indicators of time and spatial unevenness of ventricular repolarization.” Abst. Konta uses an electrode sock attached to the epicardium to detect discordant alternans. P. 2185, col. 2, fig. 1. Konta also suggests using a body surface electrocardiographic mapping technique to perform this detection. P. 2188, col. 2. Konta suggests that suppression of the detected alternans may be accomplished via drug therapy. P. 2188, col. 1.

Christini also recognizes the desirability of detecting repolarization, or T-wave alternans since they have been closely associated with vulnerability to ventricular arrhythmias, including fibrillation. Col. 2, ll. 3-39. Christini,

like Konta, recognizes that surface electrocardiographic techniques may be used to detect repolarization alternans. Col. 2, ll. 54-62. Christini seeks to improve upon that technique by using intracardiac electrodes, such as those contained in the leads of pacemakers and implantable cardiac defibrillators, in order to perform a much more rapid detection than surface electrocardiographic analysis. *Id.* Christini recognizes that alternans may be concordant or discordant. Col. 2, ll. 7-9. Although Christini contemplates placing the internal electrodes at a plurality of locations, Christini's signal analysis discussion focuses on analyzing a signal from a single electrode to detect alternans. *See* case study 2, *particularly* col. 8, ll. 63-67; col. 10, ll. 63-65 *and* claims 10 and 20. Thus, as Appellant points out, Christini is likely detecting only concordant alternans since there is no discussion of comparing the phases of signals from multiple electrodes. *See* Br. 7; *see also* Spec. 4:8-12 *and* Fig. 6 (defining discordant alternans).

Appellant contends that there would be no reasonable expectation of success in using Christini's intracardiac electrodes to identify discordant alternans. Br. 7. This argument is not persuasive. Although Christini does not expressly describe this capability, as noted above, the structure to perform this function, multiple intracardiac electrodes at a plurality of locations, is disclosed. Absolute predictability that a substitution will be successful is not required; all that is required is a reasonable expectation of success. *See In re O'Farrell*, 853 F.2d 894, 903-04 (Fed. Cir. 1988). Since Christini specifically suggests that intracardiac electrodes provide certain advantages over surface electrocardiographic techniques, one of ordinary skill in the art would have a reasonable expectation that the same analysis that Konta suggests, which can be performed via surface electrocardiographic techniques, could also be performed using Christini's

intracardiac electrodes. Detecting discordant, as opposed to concordant, alternans would only require a comparison of the signals received from the electrodes at multiple locations. *See* Spec. 4:8-12 *and* Fig. 6. One of ordinary skill in the art would have known how to implement Christini's intracardiac electrodes into Konta's process in order to arrive at a device that rapidly detects discordant alternans.

#### DECISION

For the above reasons, the Examiner's rejections of claims 1-12, 15-18, 21-49 and 52-57 are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

#### AFFIRMED

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